3. (Twice Amended) The current sensor as claimed in claim 1, wherein the at least one phase delay element is a $\lambda/4$ fiber segment with an elliptical core, and in that the $\lambda/4$ fiber segment has a length (L) which deviates from a quarter or an odd multiple of a quarter of a beat length of orthogonal polarization modes.

4. (Twice Amended) The current sensor as claimed in claim 2, comprising at least two phase delay elements, each having a fast axis, wherein the magnitude of the phase delay angle is selected as a function of a mutual alignment of fast axes of the phase delay elements.

5. (Twice Amended) The current sensor as claimed in claim 2, wherein the magnitude of the phase delay angle is selected as a function of a sign of the temperature dependence of the at least one phase delay element.

6. (Twice Amended) The current sensor as claimed in claim 2, comprising at least two phase delay elements, each having a fast axis, the fast axes being orientated at least approximately parallel to one another, wherein the magnitude of the phase delay angle is selected as a function of a mutual alignment of fast axes of the phase delay elements and as a function of a sign of the temperature dependence of the at least one phase delay element, wherein in the case of a temperature dependence of the phase delay elements of negative sign the phase delay angle is greater, and in the case of a temperature dependence of positive sign it is smaller than a phase delay angle of an ideal phase delay element.

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7. (Twice Amended) The current sensor as claimed in claim 2, wherein there are at least two phase delay elements, each having a fast axis, the fast axes being orientated at least approximately orthogonally to one another, wherein the magnitude of the phase delay angle is selected as a function of a mutual alignment of fast axes of the phase delay elements and as a function of a sign of the temperature dependence of the at least one phase delay element, wherein in the case of a temperature dependence of the phase delay elements of negative sign the phase delay angle is smaller, and in the case of a temperature dependence of positive sign it is larger than a phase delay angle of an ideal phase delay element.

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8. (Amended) The current sensor as claimed in claim 1, the current sensor comprising a Sagnac interferometer.

9. (Amended) The current sensor as claimed in claim 1, the current sensor comprising a reflection interferometer.

Kindly add the following new Claims 10-11.

B3

-- 10. (New) A fiber optic current sensor, comprising

a coiled sensor fiber which encloses a current conductor (S), and at least one phase delay element adjoining the sensor fiber, wherein the at least one phase delay element has a phase delay with a temperature dependence which at least approximately compensates for a temperature dependence of a Verdet's constant (V) of the sensor fiber, and the at least one

phase delay element has a phase delay angle whose value deviates from a phase delay angle of an ideal phase delay element.

11. (New) The current sensor as claimed in claim 2, wherein the at least one phase delay element is a $\lambda/4$ fiber segment with an elliptical core, and in that the $\lambda/4$ fiber segment has a length (L) which deviates from a quarter or an odd multiple of a quarter of a beat length of orthogonal polarization modes --